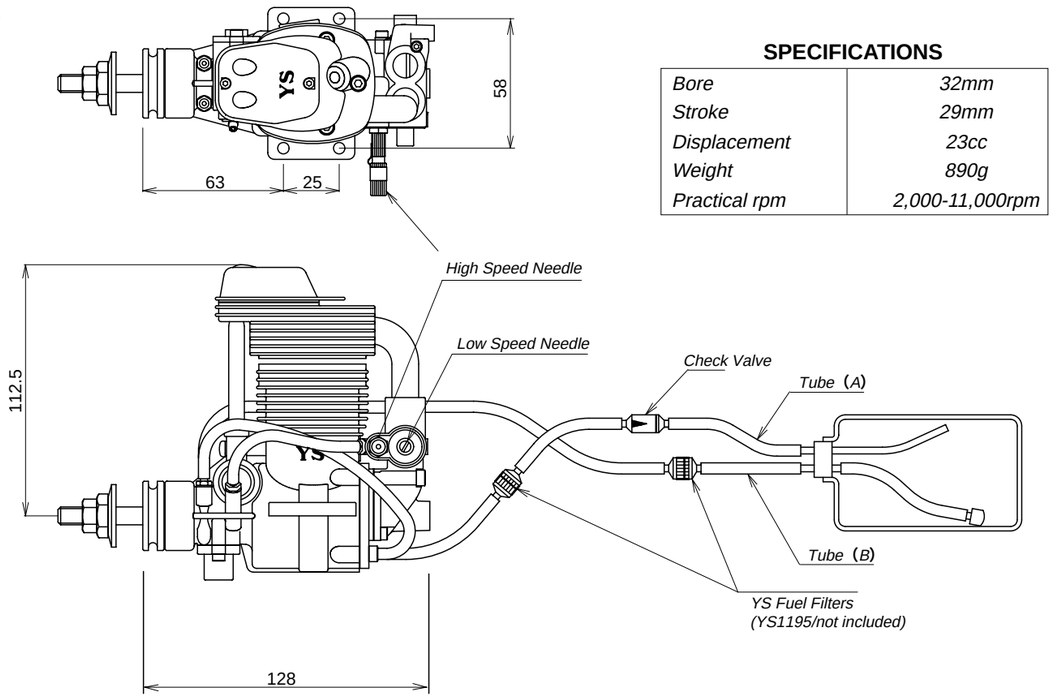
Fig.1



SPECIFICATIONS

Bore	32mm
Stroke	29mm
Displacement	23cc
Weight	890g
Practical rpm	2,000-11,000rpm

FEATURES

The FZ140 is a new generation engine that conforms for the new F3A regulations. As in our 120 series, we equipped it with a supercharge system assisted by the fuel tank pressurization mechanism. The result is a powerful engine that is lighter in weight than our 120 's

Although the FZ140 has a bigger bore and stroke than our 120 Series, it will fit the same mounting bolt pattern.

GLOW PLUG

Select the most appropriate glow plug from those designed specifically for 4 cycle engines. Glow plug selection greatly affects the maximum engine output and low idle. If RPM's decrease or stop when the booster cord is removed, replace the plug. We recomend YS #4 or OS Type F.

INSTALLATION

1. *Connect the engine to the tank as shown in fig.1. Since high pressure is applied to the tank, tighten all connections carefully. Care must be taken to prevent pressure leakage due to undertightening of the check valve or by kinking the fuel lines.*
2. *Always use a fuel filter. We recommend theYS filter.*
3. *Match the direction of the check valve arrow to fig.1,with the arrow facing towards the tank.*

PROPELLER INSTALLATION

Due to the high torque of the FZ140 engine, we have equipped It with double locknuts for safety.

1. *Mount the propeller and tighten the rear nut. Next, tighten the front nut as shown in Fig.1.*
2. *Select a good quality propeller that will turn in the 8,000 to 9,500 range, We recommend sizes 14x14,(15x12 through14) (16x10 through 14).*

START UP

1. *Remove tube B from the filter; remove tube A from the check valve, then fill the tank. (CAUTION, If tank is filled or underpressure remove tube A first, then tube B. Fuel will eject if tube B is removed while the tank is pressurized.)*
2. *Open the needle valve 2 1/2 from the fully closed position.*
3. *Open the throttle fully and slowly turn the propeller 10 times. This primes the system by pressurizing the tank and sending fuel to the carburetor.*
4. *Close the throttle to the idle position and connect the glow plug cord. The engine is now ready for starting.*

DO NOT ATTEMPT TO START AT FULL THROTTLE, AS THIS IS VERY DANGEROUS.

BREAK-IN

To maximize engine performance and increase durability, please follow this break- in procedure;

1. *Use tho same size (or slightly smaller) propeller than you intend to use in flying.*
2. *Use a good quality fuel which contains 15-30% nitromethane and oil content of 20-24%. Synthetic or castor oil can be used, or a combination of synthetic and castor. Do not use four cycle fuel due to low oil content.*
3. *The needle valve should be set so that the engine is running at rich setting. Run the engine approximately 20 minutes with this setting.*
4. *Mount the engine to the model and fly ten times with this setting. This concludes the break-in procedure, It is advisable to always use a slightly rich setting to keep the moving parts lubricated, even atter the break-in period .*

HIGH SPEED ADJUSTMENT

1. *Adjustment of high speed is done by the carburetor needle valve. When the needle valve is turned clockwise, the mixture is leaner. When it is turned counterclockwise, the mixture is richer. A good starting position for the high speed needle valve is 2 1/2 turns open from the fully closed position.*
2. *When the engine is started, open the throttle graduall. Next, find the peak position (highest RPM) by adjusting the needle valve. Then the needle valve should be opened approximately 1/8 of a turn from full RPM to achieve best performance. The engine may stop if the throttle is opened to full immediately atter starting. Wait until the engine temperature rises and then open the throttle slowly.*
3. *For flying, it is advisable to use a slightly richer mixture setting. By using a richer mlxture, the engine temperature is maintained and RPM stability improves.*

LOW SPEED ADJUSTMENT

This engine is equipped with a new low speed needle valve to adjust the mixture from low to mid throttle. This needle valve is located on the side of the throttle barrel opposite the throttle arm (Fig.1)

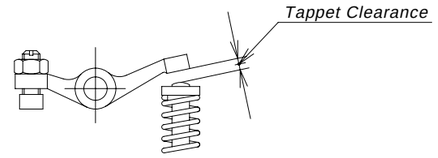
1. *Open the low speed needle valve to 1 1/2 turns from fully closed position.*
2. *The low speed needle valve should be set after the high speed needle valve has been adjusted. Close the throttle gradually to an idle (approximately 2500rpm). Let it idle for 20 to 30 seconds and then slowly advance the throttle. The adjustment is satisfatory at low speed if transition is smooth at this time.*
3. *If the engine is runnlng rough on idle, the low speed mixture is rich. If the engine starts to speed up and dies on idle or starts to detonate, when advancing the throttle, the mixture is lean. Turn the low speed needle valve clockwise to richen and counterclocwise for a leaner mixture (note that the direction of the low speed needle valve is opposite the high speed needle valve). Adjustments to the low speed needle valve should be 1/8 to 1/4 of a turn increment at a time to achieve smooth throttle response.*

IMPORTANT! The regulator adjusting screw on this engine is fatory set. No further adjustments are necessary. If for some reason you have to disassemble the regulator assembly, the regulator adjusing screw should be set flush with the regulator body.

TAPPET CLEARANCE ADJUSTMENT

1. *Tappet clearance is factory preset. No adjustment is necessary until atter 1 hour of operation (including break-in period).*
2. *Clearance adjustment should be done when the engine is cool. When the engine temperature is high, clearance is higher due to thermal expansion.*
3. *The proper clearance setting should be at 0.04-0.Imm. The adjustment is achieved by loosening the locknut (Fig. 2) and turning the adjusting screw. Tighten the locknut atter the adjusment is achieved. Atter the initial 1 hour adjustment, this procedure should be performed atter every 2 hours of use.*

Fig.2



CAM GEAR TIMING ADJUSTMENT

If for some reason you have to disassemble your engine, please follow these important steps on reassembling the cam gear.

1. *Remove the carburetor and backplate assembly. Notice the impression made on the crankshatt counterweight. Position it directly straight down or in line with the case outer seam line.*
2. *When reinstalling the cam gear, the side with a point mark should be facing the opening of the gear box, Note that it should also be mounted with the point mark located towards the top of the engine just below the cam followers.*

DIAPHRAGM AND CHECK VALVE DISASSEMBLY

Diaphragm:

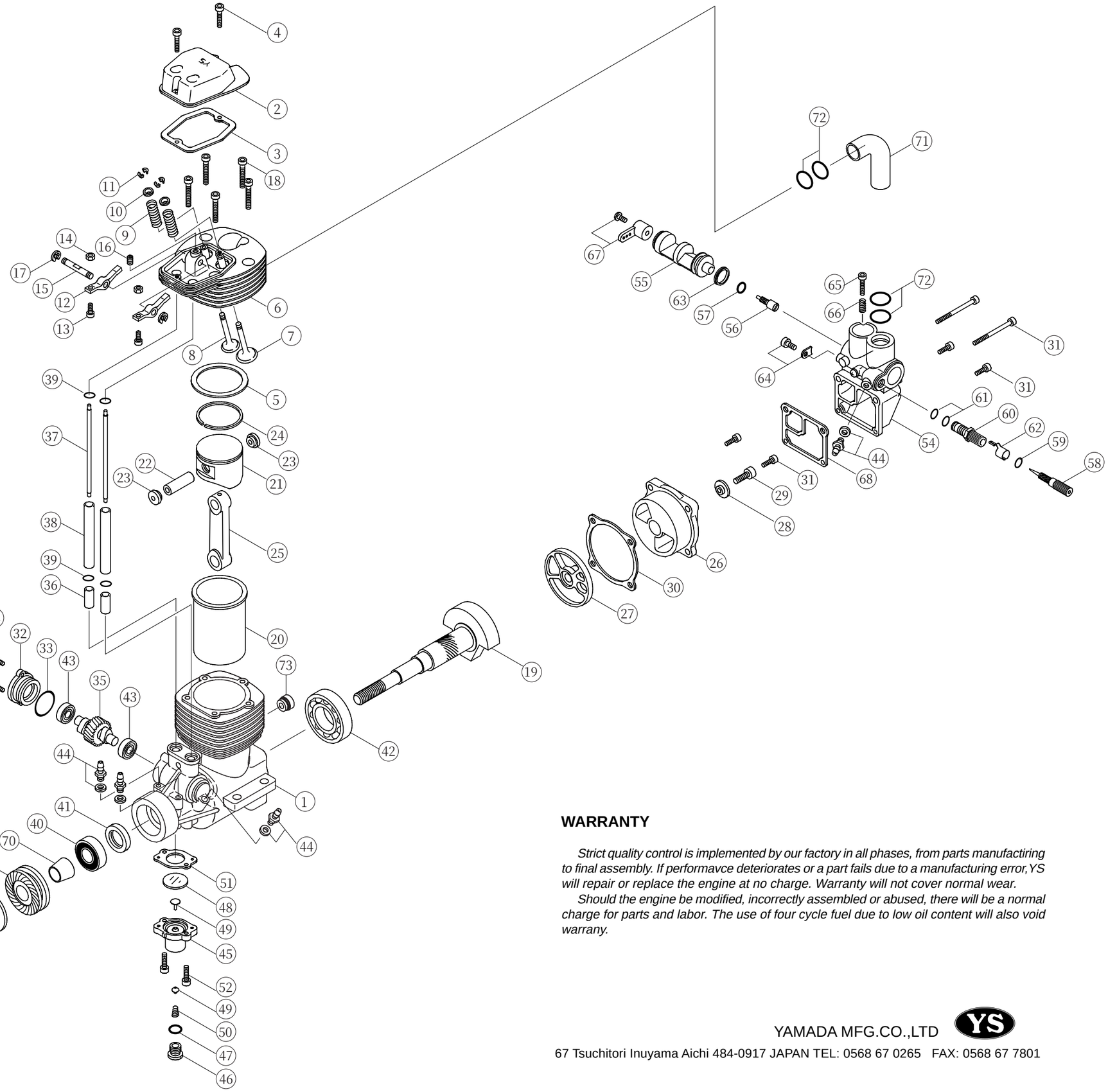
1. *Remove the adjustment screw of the valve, and then remove the inside valve and spring.*
2. *Clean the inside with alcohol or appropriate cleaner.Reassemble.*
3. *Screw in the regulator screw until flush with the diaphragm body.*

Check valve;

1. *Open the valve by rotating the body counterclockwise.*
2. *Reassemble the check valve carefully.*

IMPORTANT! Silicone rubber is used in many parts of the YSengine. Use only glow fuel or methanol for cleaning. Gasoline and other volatile solutions will damage the silicone if used.

#	PART#	DESCRIPTION	QTY
1	F1701	Crankcase	1
	F1202S	Valve Cover Assembly	
2	F1202	Valve Cover	1
3	F1203	Head Cover Gasket	1
4	F1204	Valve Cover Screw Set	2
5	F1505	Head Gasket	1
	F1506A	Head Assembly	
6	F1506	Cylinder Head	1
7	F1407	Intake Valve	1
8	F1408	Exhaust Valve	1
9	F1409	Valve Spring Set	2
10	F1410	Spring Retainer Set	2
11	F1411	Valve Spring Retainer Clips	4
12	F1212	Rocker Arm Set	
13	F1213	Tappet Adjusting Screw Set	2
14	F1214	Tappet Adjusting Rock Nuts	2
15	F1215	Rocker Arm Shaft	1
16	F1216	Rocker Arm Shaft Screw	1
17	F1217	E Ring Set	2
18	F1518	Head Bolt Set	5
19	F1519	Crankshaft	1
20	F1520	Cylinder Liner	1
21	F1521	Piston	1
22	F1222	Wrist Piston	1
23	F1523	Wrist Pin Retainer Set	2
24	F1524	Piston Ring	1
25	F1525	Connecting Rod	1
	F1716A	Back Plate Assembly	
26	F1726	Back Plate	1
27	F1427	Disc Valve	1
28	F1428	Rear Disc Valve Retainer	1
29	F1429	Retainer Screw	1
30	F1230	Back Plate Gasket	1
31	F1539	Back Plate Screw Set	6
32	F1232	Cam Gear Cover	1
33	F1233	Cam Gear Cover O-Ring	1
34	F1534	Cam Gear Cover Screw Set	2
35	F1535	Cam Gear	1
36	F1236	Cam Followers Set	2
37	F1537	Push Rod Set	2
38	F1538	Push Rod Cover Set	2
39	F1239	Push Rod Cover O-Ring	4
40	F1240	Front Bearing	1
41	F9122	Front Bearing Oil Seal	1
42	F1341	Rear Bearing	1
43	F1242	Cam Gear Bearing Set	2
44	F1534	Fuel Nipples Set With Washers	6
	F1244A	Regulator Assembly	
45	F1244	Regulator Body	1
46	F1245	Regulator Adjusting Screw	1
47	F1246	Regulator Adjusting Screw O-Ring	1
48	F1247	Diaphram	1
49	F1248	Regulator Plunger	1
50	F1249	Plunger Spring	1
51	F1250	Regulator Gasket	1
52	F1251	Regulator Screw Set	2
53	F1496	Regulator Ballast	1
	F1752A	Carburetor Assembly	
54	F1752	Carburetor Body	1
55	F1753	Throttle Barrel	1
56	F9156	Low Speed Needle Valve	1
57	F9157	Low Speed Needle Valve O-Ring 1	
	F1545S	Needle Valve Assembly	
58	F1545	High Speed Needle Valve	1
59	F1546	High Speed Needle Valve O-ring	1
60	F1555	High Speed Needle Valve Seat	1
61	F1256	Needle Valve Socket O-Ring Set	3
62	F1557	Needle Valve Detent	1
63	F1483	Throttle Barrel Seal	1
64	R6124	Throttle Barrel Retainer	1
65	F1258	Throttle Stop Screw	1
66	F1259	Throttle Stop Spring	1
67	F1260S	Throttle Arm Set	1
68	F1463	Carburetor Gasket	1
69	F1564	Drive Washer	1
70	F1565	Drive Washer Retainer	1
71	F1568	Intake Pipe	1
72	F1269	Intake Pipe O-Ring	4
73	F1382	Wrist Pin Access Plug	1
74	F1266	Propeller Washer	1
75	F1267	Propeller Nut Set	2
	F1473S	Gasket Set	4
	F1574S	O-Ring Set	13



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WARRANTY

Strict quality control is implemented by our factory in all phases, from parts manufactiring to final assembly. If performavce deteriorates or a part fails due to a manufacturing error,YS will repair or replace the engine at no charge. Warranty will not cover normal wear.

Should the engine be modified, incorrectly assembled or abused, there will be a normal charge for parts and labor. The use of four cycle fuel due to low oil content will also void warrany.

YAMADA MFG.CO.,LTD

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